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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Alan D. Kersey

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EXAMINER

BLEVINS, JERRY M

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/756,183	Applicant(s) KERSEY ET AL.	
	Examiner JERRY BLEVINS	Art Unit 2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,8,9 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6,8,9 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed December 15, 2009 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Specifically, the previously cited prior art reference to Chan et al., US 6,194,120, is relied upon for its teaching of an optical sensor comprising a D shaped optical waveguide (Figures 1b and 2 and column 8, lines 15-34), whereas the previously cited prior art reference to Ronnekleiv et al., US 2002/0041724 is relied upon for its teaching of an optical sensor wherein polarization or birefringence of an optical waveguide changes in response to a measurand. Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the D shaped optical waveguide of Chan such that its polarization or birefringence changes in response to the measurand, as taught by Ronnekleiv. This proposed combination (along with the previously articulated combination of the prior art reference to Jorgenson et al., US 5,647,030) would render obvious each limitation of the presently claimed invention, as claimed in the independent claims 1 and 8. Ronnekleiv does not need to specifically teach a D shaped waveguide, as this limitation is already articulated in the Chan

reference, and the Ronnekleiv reference is relied upon as motivation for modifying any optical waveguide of an optical sensor, including the D shaped one of Chan.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,194,120 to Chan et al. in view of US 5,647,030 to Jorgenson et al. and in view of US 2002/0041724 to Ronnekleiv et al.

Regarding claim 1, Chan teaches an optical sensor for sensing a measurand (Figures 1b and 2, abstract and column 8, lines 15-34, the measurand being electric field), comprising: an optical waveguide (30) having an outer cladding (50) and at least one inner core (40) disposed therein which propagates light (column 25, lines 39-57); and a D-shaped portion of the optical waveguide having a generally D-shaped cross-section (Figures 1b and 2); and a layer (60) disposed on a flat surface of the D-shaped portion, wherein a refractive index of the layer changes (column 25, line 65 – column 26, line 43). Chan does not specifically teach that the refractive index of the layer changes in response to the measurand. Jorgenson teaches an optical sensor for sensing a measurand wherein the refractive index of a layer changes in response to the measurand (column 7, line 60 – column 8, line 45). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the changing of the refractive index of

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the layer of Chan be in response to the measurand, as taught by Jorgenson. The motivation would have been to improve the capabilities of measuring the measurand. Chan also does not teach that a polarization or a birefringence of the optical waveguide changes in response to the measurand. Ronnekleiv teaches birefringence of an optical waveguide changing in response to a measurand (paragraph 115). It would have been obvious to one of ordinary skill in the art at the time of the invention to change a polarization or a birefringence of the optical waveguide of Chan in response to a measurand, as taught by Ronnekleiv. The motivation would have been to improve the sensing capabilities of the optical waveguide.

Regarding claim 3, Chan teaches that the measurand includes at least one of the members of the group consisting of heat, humidity, light, electric field, magnetic field, and chemicals (column 8, lines 15-34, the measurand being electric field).

Regarding claim 6, Chan teaches that a transverse outer dimension of the waveguide is greater than 0.3 millimeters (column 26, lines 15-43).

Regarding claim 8, Chan teaches an optical sensor for sensing a measurand (Figures 1b and 2, abstract and column 8, lines 15-34, the measurand being electric field), comprising: a first D-shaped waveguide having a generally D-shaped cross-section (30); a second D-shaped waveguide having a generally D-shaped cross-section (280), wherein the first and second D-shaped waveguides are optically coupled together (column 27, lines 1-26); and a layer (260) disposed between the first and second D-shaped waveguides (Figure 2), the layer capable of changing thickness (column 25, line 65 – column 26, line 43), wherein the measurand includes at least one of the members of the group consisting of heat, humidity, light, electric field, magnetic field and chemicals (column 8, lines 15-34). Chan does not specifically teach that the layer

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changes thickness in response o the measurand. Jorgenson teaches an optical sensor for sensing a measurand wherein the thickness of a layer changes in response to the measurand (column 7, line 60 – column 8, line 45). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the changing of the thickness of the layer of Chan be in response to the measurand, as taught by Jorgenson. The motivation would have been to improve the capabilities of measuring the measurand. Chan also does not teach that a polarization or a birefringence of the optical waveguide changes in response to the measurand. Ronnekleiv teaches birefringence of an optical waveguide changing in response to a measurand (paragraph 115). It would have been obvious to one of ordinary skill in the art at the time of the invention to change a polarization or a birefringence of the optical waveguide of Chan in response to a measurand, as taught by Ronnekleiv. The motivation would have been to improve the sensing capabilities of the optical waveguide.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Jorgenson and in view of Ronnekleiv as applied to claim 8 above and further in view of U.S. Patent to Bergh, 4,386,822.

Regarding claim 9, Chan in view of Jorgenson and in view of Ronnekleiv renders obvious the limitations of the base claim 8. Chan also teaches that the first D-shaped waveguide has at least one first inner core (40) disposed therein which propagates light and that second D-shaped waveguide has at least one second inner core (280) which propagates light. Chan does not teach that the waveguides propagate light in substantially a few spatial modes. Bergh teaches an optical sensor comprising a D-shaped optical waveguide (Figure 2) wherein the waveguide

propagates light in substantially a few spatial modes (column 1, lines 43-57). It would have been obvious to one of ordinary skill in the art at the time of the invention to propagate light through the waveguides of Chan in substantially a few spatial modes, as taught by Bergh. The motivation would have been to increase the bandwidth of the propagating light.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Jorgenson and in view of Ronnekleiv as applied to claim 8 above and further in view of US 2002/0197037 to Bailey et al.

Regarding claim 11, Chan in view of Jorgenson and in view of Ronnekleiv renders obvious the limitations of the base claim 8. Chan does not teach that the first and second D-shaped waveguides include a plurality of cores. Bailey teaches an optical sensor and sensing method comprising first and second D-shaped optical waveguides wherein the first and second D-shaped waveguides include a plurality of cores (Figures 20-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the multiple cores of Bailey in the waveguides of Chan. The motivation would have been to increase the number of waveguiding paths (Bailey, page 1, paragraph 9).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY BLEVINS whose telephone number is (571)272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark A. Robinson can be reached on 571-272-2319. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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